

Engineering Committee Report

Republican River Compact Administration

October 16, 2012

COMMITTEE ASSIGNMENTS AND WORK ACTIVITIES RELATED TO THESE ASSIGNMENTS

The Engineering Committee and technical representatives from the States of Colorado, Kansas, and Nebraska participated in several collaborative work activities and phone conferences and the following assignments and work activities were completed:

1. Finalize work on a user's manual for the RRCA Accounting Procedures and provide a recommendation to the Administration for adoption at next year's annual meeting or earlier.
 - a. The status of this assignment is that Kansas provided their initial thoughts on the user's manual to Colorado and Nebraska for review. No progress was made on this assignment. The assignment was tabled by the Committee this year, but should be continued for next year.
2. Exchange by April 15, 2012 the information listed in Section V of the RRCA Accounting Procedures and Reporting Requirements, and other data required by that document. By July 15, 2012 the states will exchange any updates to these data.
 - a. Kansas and Nebraska posted their model data sets prior to April 15, 2012. Colorado provided preliminary pumping data on April 26 to Willem Schreuder of Principia Mathematica, who ran a preliminary version of the RRCA groundwater model and posted it April 27, 2012 on the RRCA website that he maintains for the Administration.
 - b. The States exchanged their available final data by September 20, 2012. Willem Schreuder of Principia Mathematica completed a run based on this data on October 4, 2012.
 - c. Data sets were collected by the Committee for stream flow, climate information, diversion records, and reservoir evaporation records of the three states in cooperation with the U.S. Geological Survey, U.S. Bureau of Reclamation, and U.S. Army Corps of Engineers for 2011.
3. Continue efforts to resolve concerns related to varying methods of estimating ground and surface water irrigation recharge and return flows within the Republican River Basin and related issues.
 - a. The status of this assignment is that Kansas provided literature regarding irrigation efficiency to Colorado and Nebraska for their review at the 2011 annual meeting. Aside from that initial review and comments by Colorado and Nebraska, no additional progress has been made on this assignment. Kansas has indicated its intent to propose a study to resolve the problems of differing

groundwater irrigation recharge methods. The assignment should be continued for next year.

4. Retain Principia Mathematica to perform on-going maintenance of the ground water model and periodic updates requested by the Engineering Committee for calendar year 2012. The billable costs shall be limited to actual costs incurred, not to exceed \$15,000 in total and will be apportioned in equal 1/3 amounts to the States of Colorado, Kansas, and Nebraska respectively.
 - a. Each state separately contracted with Principia Mathematica for calendar year 2012.
5. Continue development of a five-year accounting spreadsheet/database for adoption at the 2012 annual meeting or earlier.
 - a. The status of this assignment is that Nebraska offered a spreadsheet for consideration. Kansas reviewed that document and offered suggestions in a new spreadsheet for the states to discuss. No progress was made on this assignment. The assignment was tabled by the Committee this year, but should be continued for next year.
6. Continue to review Colorado's augmentation proposal, as appropriate.
 - a. This assignment was not discussed by the Engineering Committee because the topic has been under discussion by a separate negotiating group.
7. Continue efforts to finalize accounting for 2006-2010.
 - a. The issues preventing the states from agreeing on the accounting are pending in the current Supreme Court case.
8. Continue discussion of issues preventing agreement on final accounting for 2006-2010.
 - a. The issues preventing the states from agreeing on the accounting are pending in the current Supreme Court case.
9. Develop a procedure to account for inflows to the stream segment between Guide Rock diversion dam and the relocated stream flow gage.
 - a. Nebraska investigated several methods of measurement and provided the alternatives and approximate cost to the other states. With input from the Commissioners at the work session, a formal proposal can be prepared. The assignment should continue for next year.
10. Discuss the application of the revised Bonny Reservoir area-capacity tables to current and past accounting data.
 - a. Kansas agrees to adopt the revised Bonny Reservoir area-capacity tables and apply it to 2011 data and into the future.
 - b. Colorado wants the area-capacity tables retroactively applied for 2007 to 2010.
 - c. The committee would appreciate direction from the Commissioners.
11. Discuss any accounting changes that may be needed for surface water diversions for the purpose of recharging groundwater.

- a. The committee discussed the topic on several occasions, but no formal action was taken on the assignment at this time. The assignment should be continued.
12. Discuss developing a framework for an application and approval process for future augmentation plans.
 - a. Kansas provided the committee with its initial thoughts on the type of information that should be provided with a plan and a list of questions for discussion in an email (September 27, 2012). The committee would appreciate discussion by the Commissioners. The assignment should be continued.
13. Apply the procedure described in Exhibit A of the 2011 Engineering Committee report to fill in missing precipitation data in the groundwater model for compact years 2008, 2009 and 2010 and for subsequent years.
 - a. This was completed on Sept 7, 2011 by Willem Schreuder of Principia Mathematica.
 - b. An additional issue surfaced with the 2011 data set such that a refined proposal is required for approval by the Administration. The Engineering Committee's conclusions and recommendation will be offered to the Administration as Exhibit A to this report.
14. Discuss archiving the data and materials from the Conservation Committee study.
 - a. The Committee discussed options for archiving the data and materials from the Conservation Committee study. Several locations (websites) have been identified as possible sites for archiving the data and materials. A final recommendation will be made to the Administration at the annual meeting.
15. Amend the RRCA Rules and Regulations, as discussed on page 76 of the 2010 transcript.
 - a. The assignment was completed and the proposed amended regulations are attached to this report as Exhibit B. The amended RRCA Rules and Regulations will be offered for approval by the Commissioners at the 2012 annual meeting.

RECOMMENDED ASSIGNMENTS FOR THE COMING YEAR

The Engineering Committee recommends the Republican River Compact Administration assign the following tasks:

1. Exchange by April 15, 2013 the information listed in Section V of the RRCA Accounting Procedures and Reporting Requirements, and other data required by that document. By July 15, 2013 the states will exchange any updates to these data.
2. Continue efforts to resolve concerns related to varying methods of estimating ground and surface water irrigation recharge and return flows within the Republican River Basin and related issues.
3. Retain Principia Mathematica to perform on-going maintenance of the ground water model and periodic updates requested by the Engineering Committee for calendar year 2012. The billable costs shall be limited to actual costs incurred, not to exceed \$15,000 in

total and will be apportioned in equal 1/3 amounts to the States of Colorado, Kansas, and Nebraska respectively.

- a. Kansas Proposal - As the RRCA chair, Kansas will coordinate the work of the committee to collect all needed data (April 15th) and based on this, will develop a preliminary model run and necessary updates based on improved data and post the model input data and output results for review by the other states. The state will also archive the resulting accounting.
4. Continue efforts to finalize accounting for 2006-2010.
5. Continue discussion of issues preventing agreement on final accounting for 2006-2010.
6. Develop a procedure to account for inflows to the stream segment between Guide Rock diversion dam and the relocated stream flow gage.
7. Discuss any accounting changes that may be needed for surface water diversions for the purpose of recharging groundwater.
8. Discuss developing a framework for an application and approval process for future augmentation plans.
9. Finalize the procedure described in Exhibit A of this report to apply to 2011 and subsequent years with missing precipitation data.
10. Finalize work on a user's manual for the RRCA Accounting Procedures and provide a recommendation to the Administration for adoption.
11. Continue development of a five-year accounting spreadsheet/database for adoption.

ATTACHMENTS

Exhibit A - Precipitation procedure

Exhibit B - RRCA Rules & Regulations revision

The Engineering Committee Report and the exchanged data will be posted on the web at www.republicanrivercompact.org.

SIGNED BY

Scott E. Ross
Chair, Engineering Committee Member for Kansas

Ivan Franco
Engineering Committee Member for Colorado

James Schneider
Engineering Committee Member for Nebraska